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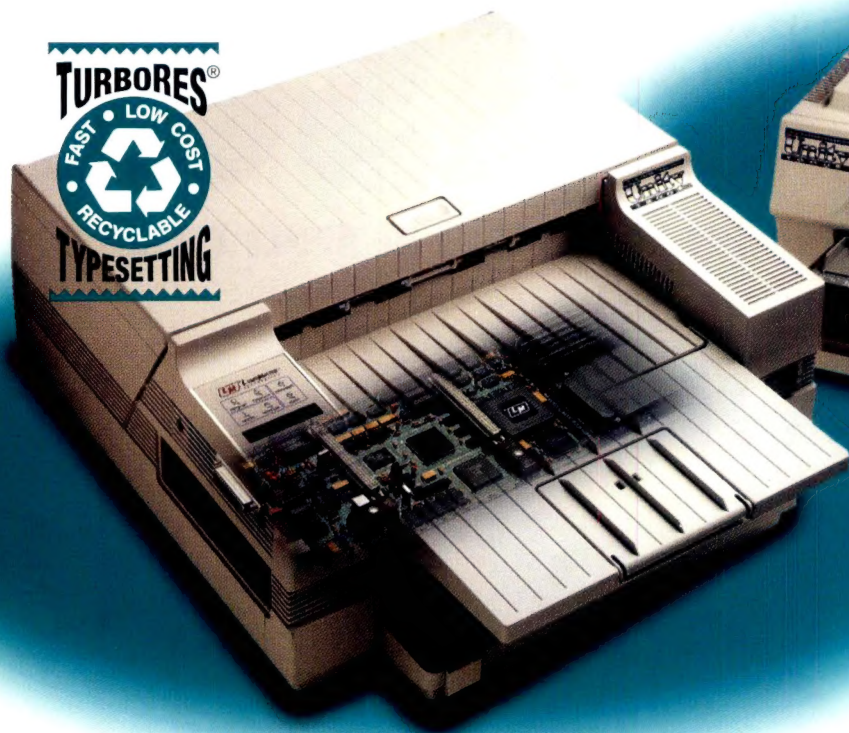


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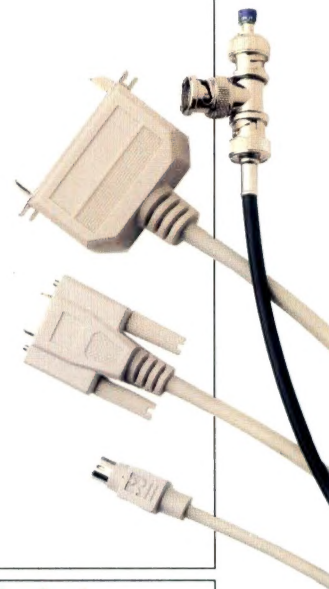
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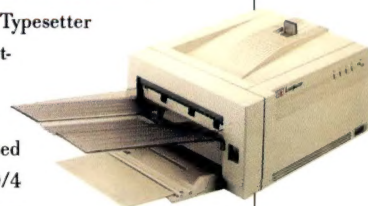
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EDITORIAL (tel 071 323 0232/fax 071 436 5385)

Editor Caroline Bassett

Deputy Editor/Production Editor Stuart Price

Contributors Tim Carrigan, Karen Harvey,
Joanne Hurley, Chris Lannigan, Toni McTaggart,
Michael Prochak

DESIGN & PRODUCTION (tel 071 323 0232/fax 071 436 5385)

Art Editor Andrew Turnbull

Deputy Art Editor Christine Coirault

Deputy Production Editor Emma Drew

ADVERTISING (tel 071 631 1997/fax 071 636 5668)

Advertisement Manager Caroline Evans

Assistant Advertisement Manager Andrew Archer

Senior Sales Executive (Display And Recruitment) Matthew Hayes

Sales Executive (Display) Nicola Taylor

Sales Executive (Classifieds) Julian Elvin

Advertisement Production Elizabeth Whittaker

Advertisement Production Assistant Jenni Wood

CIRCULATION & SUBSCRIPTIONS

(tel 071 580 6163/fax 071 636 5668)

Group Circulation Development Manager Norman Diamond

Circulation Manager Mary Bramble

Database Assistant Ghazala Khan

Newstrade Circulation Manager Sean Farmer

MARKETING & PROMOTION

(tel 071 631 1433/fax 071 636 5668)

Marketing Communications Executive Paula Nulty

Mail Order Manager Julia French

Publisher Alison Hjul

DENNIS PUBLISHING LTD

Chairman Felix Dennis

Managing Director Colin Crawford

Editorial Director Bruce Sawford

Advertisement Director Alistair Ramsay

Non-Executive Director Dick Pountain

Production Manager Jim Bulley

Group Art Director Jimmy Egerton

Colour Origination Cymbol/The Scanning Agency

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HOW TO CONTACT US

AppleUser's mailing address is 19 Bolsover Street, London W1P 7JH.

Main switchboard telephone number 071 631 1433.

Editorial (tel) 071 323 0232; (AppleLink) macuser.uk; (CIX) macuser; (fax) 071 436 5385.

Advertising (tel) 071 631 1997; (fax) 071 636 5668.

Circulation & Subscriptions (tel) 071 580 6163; (fax) 071 580 6170.

Marketing (tel) 071 631 1433; (fax) 071 580 6170. **US Office** (tel) 0101 603 889 4808.

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Beyond The Mac

Apple is more than the Mac – and more than desktop computing. The company that started the desktop computing revolution, invented DTP alongside Adobe and Aldus, popularised the graphical user interface and announced the first operating system capable of handling video as well as graphics is now looking at a whole new generation of machines designed to take advantage of the digitalisation of consumer electronics, communications and publishing industries.

Beyond the current 680X0-based Macs, Apple plans a new generation of desktop machines based on RISC technology jointly developed by Apple and IBM. We look at the issues facing today's users and at the advantages the new platform should bring.

The fight to control the space under your TV is getting fiercer, and Apple is in there at the front. We look at who's doing what with multimedia at home and at work, and at the products we can expect from Apple in the future. We also include a report on Newton, the technology which will spearhead Apple's bid to launch a new generation of products – Personal Digital Assistants – machines to help us organise our business and personal lives. It has the ability to intelligently sift and sort information and input it using technologies like pen and, eventually, voice recognition.

Beyond the Mac may sound like a sci-fi film, but the technologies we discuss here will be real products sooner than you think. So beam up to a comfortable armchair and get reading.

AU

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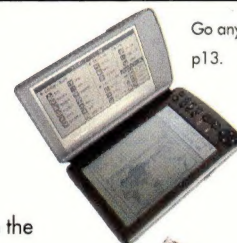
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p13.



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p18.



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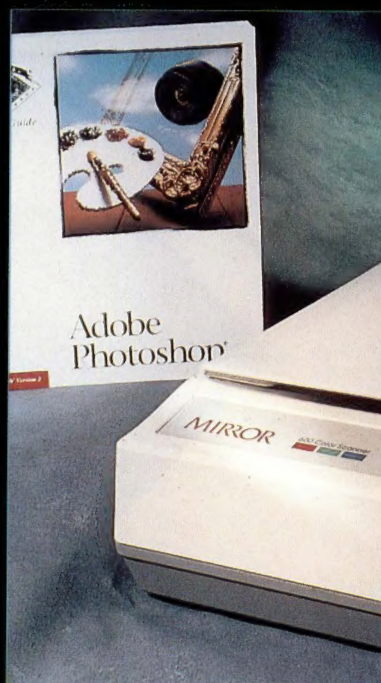
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Homeward Bound

Apple has identified three basic multimedia platforms: the desktop, the portable and the home. By the end of the year, the company will have products in two of the areas, but it is obviously looking to dominate in the home, too.



Illustration by Paul Wootton

Apple believes that 1993 will be the year of multimedia – seriously. If this statement lacks credibility, it's almost certainly due to the term 'multimedia', a word that Apple largely created and one which is now held in almost universal disdain. The problem is that neither Apple – nor anyone else, for that matter – has yet to come up with a better term to describe the trend towards storing all information as digital data.

A host of different worlds has collided and the outcome is a new technological order in which your hi-fi, telephone, television and VCR, as well as the computer on your desk, will soon theoretically

By Tim Carrigan

◀ handle pictures, sound, video and any combination of these. In a digital world, you can watch the telephone, interact with the TV and listen to the computer. It's digitalisation and Apple believes this is its future. The Mac has had an important role in promoting this. One of the first multimedia devices ever developed, the Mac has helped people understand, create, store and use digital images, digital sound and, with QuickTime, digital video.

But Apple is now starting to look beyond the Mac, to potentially much larger markets for multimedia computers. Apple CEO John Sculley has talked about three basic multimedia platforms: the desktop device, portable devices, and devices designed specifically for use in the home. By the end of 1993, Apple will have products in at least two of these categories, but clearly it has aspirations to be dominant in all three.

Desktop Revolution

On the desktop, the Mac has already established itself as the premier platform for creating multimedia productions, a position that has increasing importance as Apple's multimedia plans expand. Sound has been a basic building block of the Mac since day one. It has also sported a consistent graphic system that makes it easy for any Mac to display the same graphics, although at different levels of colour or quality.

The release in 1991 of QuickTime helped to cement the Mac's position in the hearts and minds of multimedia producers. It was also crucial in differentiating the Mac from Windows 3.1 as a platform for multimedia, at a time when the Multimedia PC consortium was threatening to make major inroads into traditional Mac territory.

The result is that most professional multimedia producers – whether they are developing CD-i (compact disc-interactive) titles for the consumer market or interactive training material for corporate consumption – use the Mac as an integral part of their production process. Much of this is thanks to excellent tools such as Macromedia Director, Opcode's SoundTools, Adobe Photoshop and Adobe Premiere, all of which are light years ahead of what is available on other platforms.

In 1993, Apple will be stepping up its campaign to position the mainstream

Mac as the leading platform for professional multimedia applications. Indeed, the announcement of the two new mid-range machines, the Mac IIvx and Ilvi, demonstrate Apple's commitment to pushing CD-ROM into mainstream usage. With faster, lower-cost CPUs and an integrated high-performance CD-ROM drive with PhotoCD-compatibility, Apple is hoping these new machines will extend the possibility for both multimedia authoring and the consumption of CD-ROM titles by a much larger proportion of Mac owners.

More than any other technology, Apple is pinning its multimedia hopes on PhotoCD. Apple sees the new Kodak system for storing high-quality photographic colour images on CD as finally providing the impetus for its installed base of at least five million users, most of whom are doing graphical tasks, to buy a CD-ROM drive. PhotoCD will also provide a low-cost route for users to make their own CD-ROMs, which could range from simple discs of images to

**Hand-held
multimedia is more
to do with titles
than technology**

full-blown interactive productions with sound, animation and video.

On the back of this, Apple is betting that the Mac will reach critical mass as a viable platform for which to publish interactive CD-ROM titles. At present, the big problem for many of the companies producing these products is that, while they are sympathetic to producing for the Mac, the simple fact that the total installed base of CD-ROM drives is – by Apple's own admission – only around 300,000 makes it financial suicide.

Multimedia On The Move

Another limitation of the desktop Mac platform from the interactive publisher's point of view is its lack of portability. A great example of this is the travel guides that are already available for the Mac on CD-ROM. While they are not perfect as

products, their basic flaw is that you can't take the information with you when you travel to the places they are referring to.

Apple's next line of multimedia products, a hand-held device codenamed SweetPea, is currently being developed in an alliance with Toshiba and is expected on the market in 1993. The concept of the new machine is a hand-held CD-ROM computer about the size of an average paperback which is capable of sound, text and images. It isn't yet clear what the final specification for SweetPea will be, but an early prototype shown to developers had a black-and-white LCD screen, a standard 5in CD-ROM drive and was similar in size to a portable CD player.

Apple, however, isn't the first to realise that portability is key to the success of multimedia publishing. Sony has already been in the market for two years with the DataDiscMan, new versions of which – called Electronic Book Player – have just been released in the UK. While successful in Japan, the DataDiscMan has all but flopped in Europe and the US, largely due to a lack of compelling titles. This problem has been compounded because the machine uses a non-standard 3in disc, and has its own, unique operating system.

Sony has addressed many of these problems with its new CD-ROM XA player, dubbed the BookMan. This represents the second generation of its thinking on hand-held multimedia devices and is believed to be similar to the device Apple and Toshiba are likely to produce. The BookMan is 7in by 2in by 6in, is based on a 16-bit microprocessor, has a QWERTY keyboard, an eight-grey-scale LED display, built-in speakers and will have MS-DOS in ROM. Unlike the DataDiscMan, the BookMan will use standard 5in CD-ROM discs. The use of the CD-ROM XA allows the machine to simultaneously display text and graphics while playing sound.

Apple's product will be distinguished by its software interface, a problem which has plagued other hand-held multimedia devices. However, in the long run, the battle for domination of the embryonic market for hand-held multimedia players will have much more to do with titles than it will with technology, and it's here that Apple, rightly or wrongly, perceives it has the lead. ▶

ON THE MENU: WHO'S TALKING TO WHOM ABOUT WHAT



The top management of most of the major computer, communications, and consumer electronics companies are out to lunch over multimedia. They're there to talk deals and alliances as it becomes increasingly clear that collaborations between these three key players will be critical to pushing multimedia technology into mainstream usage.

As the deal-making continues, a frenzy, of rumours abound. Some media commentators have IBM close to a deal with Warner and other major cable TV providers to establish an all-digital cable system. Bill Gates is increasingly seen in Tinsel Town mixing with the likes of Michael Ovitz, head of the all-powerful talent agency CAA. Here's a guide to the deals that have actually been completed and announced.

Apple And Sharp: Have signed a deal to collaborate on the development of PDAs based on Apple's Newton technology. This will see both companies marketing different versions of the initial Newton notepad, both of which Sharp will manufacture.

Apple And IBM: As part of its long-term strategic alliance to develop the PowerPC architecture and its new object-oriented operating system, Apple and IBM have agreed to work on multimedia standards. This work is being carried out by jointly-owned Kaleida, which is focusing its efforts on the development of a platform-independent scripting language, and engines for universal playback of

multimedia documents. Some of Kaleida's work is being used in the development of SweetPea.

Apple And Toshiba: For the development of hand-held CD-ROM players, Apple has chosen to work with Toshiba. Together, the two companies are developing a products codenamed SweetPea which has a similar specification to the latest model of Sony's Electronic Book Players.

Apple And Kodak: Apple and Kodak are natural partners. To make PhotoCD work, Kodak needs to get it accepted early in the professional market, and when it comes to professional imaging, the Mac is the only platform in town. Apple, on the other hand, has been looking for the hook that will help it to sell CD-ROM players to a large percentage of its installed base, as a way of kick-starting a market for other CD-ROM information products. It's for these reasons that the two companies have agreed to a broad set of collaborations over the PhotoCD technology.



Sony's BookMan: Portable multimedia.

Microsoft And Sony:

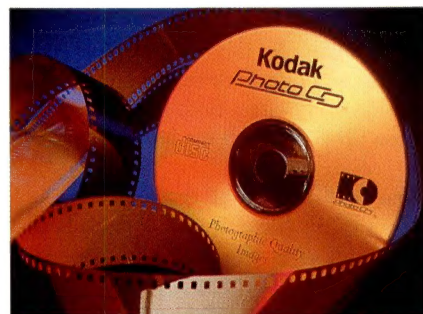
After lacklustre sales of its DataDiscMan in the US and Europe, Sony has been re-thinking its strategy for hand-held CD-ROM players. It has already launched a new range of machines similar to the DataDiscMan called Electronic

Book Players, which use a non-standard 3in CD disc. It is also set to announce a product, dubbed the BookMan, on which it has been collaborating with Microsoft. It has a 256-colour screen, uses standard 5in discs and has DOS as its operating system.

Microsoft And Dorling Kindersly:

One of the most interesting alliances is the link between UK publisher Dorling Kindersly – which has developed the market for highly illustrated non-fiction books – and Microsoft. In 1991, Microsoft bought a stake in DK, and ever since the two companies have been working on CD-ROM products which are rumoured to be seminal works.

Philips And Kodak: While Kodak is getting much of the credit for PhotoCD, a large part of the technology development has actually been done by Philips, which has also played a critical role in developing the system. Philips is also manufacturing all Kodak's PhotoCD players.



PhotoCD: Players manufactured by Philips.

Because the majority of the interactive publishing industry uses the Mac platform, the machine has a disproportionately strong catalogue of interactive titles for the small size of the installed base of CD-ROM drives. And where the PC has many more titles, these are primarily text-based, as opposed to the graphic and sound content of Mac titles.

To capitalise on this lead, Apple will need to make it easy to run multimedia products created with and for the Mac on the SweetPea. Clearly, this is Apple's goal, but the jury is still out on whether it can deliver. At the heart of Apple's problems is the incredible power needed to run many of the Mac's leading CD-ROM products. Read the small print on the back of half the CD-ROM titles and you'll find something like: "Recommended: System 7.1, Quadra 700 or

greater, 16M RAM, 600M hard disk..."

Making an affordable product with the ability to do much the same as a desktop Mac is no easy task. It means Apple has to decide exactly how it will position SweetPea, and make a whole series of trade-offs between performance and price. Early indicators are that Apple will veer towards low pricing, with a target cost of under £1000, which would make SweetPea price-competitive with Sony's BookMan. By taking this route, Apple is hoping the product will be attractive for both professional applications, especially when combined with easy-to-use authoring tools for making your own disc, as well as giving it a foothold in the top end of the consumer market.

However, a low-cost, low-specification machine may deter potential

developers of commercial titles, as it will inevitably make creating compelling titles more difficult. Critically important will be the degree to which the machine is able to harness the possibilities of QuickTime, which, in version 1.5, now allows quarter-screen video at 10fps. Needless to say, most developers and publishers are expecting to be underwhelmed.

Home Base: All-Critical Market

It's in the all-critical home market that Apple is still hedging its bets. In late 1990 and early 1991 Sculley and other key Apple staffers such as Dave Nagel, who heads the Advanced Technology Group, took every opportunity to sell the idea of an interactive television set. Behind all this talk of the third paragon in television was, and still is, a very

- serious R&D and product development effort aimed at delivering a platform for multimedia in the home.

The launch in the US (so far) of three 'consumer' Macs is an indication that Apple believes it can get a level of penetration into the home market with the mainstream Mac platform. The Performa 600, known as the Mac Ilvi in the UK, comes with a CD-ROM drive option, a clear indication that Apple also hopes to get multimedia into the home office.

But in the larger scheme of things, the Performa is a holding action while Apple and the rest of the consumer electronics business try to work out exactly how they are going to use multimedia as a Trojan horse to get a computer into every home. And that doesn't mean simply into the study.

As the multimedia industry grows older and more sophisticated, there is an increasing realisation that the home contains a number of distinct sites, each of which is a potential market for multimedia devices focused on a particular application. Most computer companies, for example, have already forsaken the teenage boy's bedroom where Nintendo and Sega – both of which will release CD-ROM systems before Christmas – reign supreme.

The position that all the major vendors really have their sights on is the living room – more specifically, the space underneath the family television. The incredible success of the VCR in the 1980s, which now has an installed base of over 70% of homes with TVs in many first-world countries, has instilled a belief that the creation of the next generation of TV-based system is the panacea for what ails both consumer electronics and computer businesses.

It is this vision that has driven Philips to speculate as much as \$1 billion developing its CD-i systems, which it is now desperately trying to establish as a worldwide standard for multimedia publishing. It's also fuelling other contenders to the crown, such as Commodore with its CDTV system, and now Tandy, which has worked with Microsoft to develop a Windows-based system called the Video Information System. And, of course, there is the all-important PhotoCD.

Apple is rumoured to be developing all kinds of television-based multimedia systems. One rumour in mid-1991 was

MICROSOFT AND APPLE SLUG IT OUT ON WINDOWS

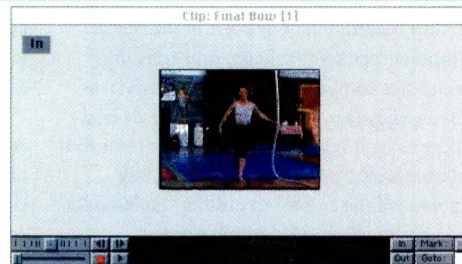


The first real threat to Apple's domination of the multimedia high ground post-QuickTime is Microsoft's Video For Windows. Announced at November's Comdex show nearly a year after QuickTime first hit the headlines, Video For Windows is an extension to Windows 3.1 that allows software-only digital video playback.

Much like QuickTime, Video For Windows is scalable. It will allow digital video files to be played on any 386 or 486 Windows PC without any additional hardware. For movie capture, users will have to add their own video digitisers. If you add a special accelerator card, you will be able to create full-screen, full-motion video using Video For Windows.

Microsoft has also tried to make it possible to use digital video files in any application. This has been achieved via Windows OLE (Object Linking and Embedding). Using this, digital video objects can be added to any OLE-aware Windows applications, making it possible to use the files in word processors and spreadsheets.

Video For Windows also supports a range of different compression and decompression systems through something similar to QuickTime's compression managers and has a set of codecs (compression/decompression) which describe each compression algorithm. One of the key codecs is based on



QuickTime: Movies produced on the Mac can run under Windows.

Intel's Indeo technology, which is itself an evolution of the compression algorithms that Intel has been developing for DVI.

With the announcement of Video For Windows, Intel has radically changed its strategy for DVI. Where it has previously worked with IBM to develop DVI as a hardware product, it has now chosen to license some of its compression technology to both Apple and Microsoft, and position its DVI hardware as a platform for capturing and accelerating digital video files.

Apple has also licensed Intel's Indeo technology, and is working to integrate it into QuickTime and into its new tools for using QuickTime movies in Windows, called QuickTime For Windows. This allows QuickTime movies to be played under Windows. Microsoft has also developed its own tools for converting QuickTime movies so that they can be used in the Windows environment.

that it was considering strong support for CD-i by licensing the technology from Philips and producing its own branded player with many extra features. Others have Apple using its strong system software to create a new box of tricks to compete against CD-i and other formats.

At present, though, Apple is playing wait-and-see. Critically important will be the success of CD-i this and next Christmas, especially the new version of the player with full-motion video, which is set to make an appearance any day.

Kaleida Scope: A Battle Lost And Won On Titles

The other key strategic component in Apple's plans to dominate digitalisation of information is Kaleida. Its role will be critical, as initially the battle will be won and lost on titles, and it's Kaleida that has been given the job of creating a standard acceptable to the nascent interactive publishing industry, one which will encourage them to develop for

the Mac/PowerPC/SweetPea platform.

In 1992, Kaleida's silence has been deafening, and there are doubts about what exactly the joint IBM and Apple company is doing, and when, if ever, it will have an impact on what happens at the desktop.

Kaleida's brief is to develop industry-wide standards for multimedia publishing. Its work is to pick up where QuickTime left off, in terms of defining file formats that could be compatible with other computer systems and methods of gracefully degrading high-quality content such as video, sound, and pictures to the level of the host playback system.

It's not easy, especially when compounded with the difficult task of having to master the widely divergent views on multimedia and style of management. Most producers don't really expect Kaleida to play a meaningful role until late 1993, and then wonder if it can really deliver useful tools at all.

Just one. . . .



Qisk 128Mb Optical Disk

. . . just one little optical Qiskette in the R128 drive puts as much data on your Mac as 120 ordinary floppies.

But it costs only £36, and fits in a business envelope. An ISO standard format, perfect for everyday and archival storage.

Or else choose the economical Qisk R21 SCSI drive, compatible with HD floppies as well as its own 21Mb 'floptical' disks.

Call or write for details of the R21, R128 or other Qisk storage and backup products.



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INFOLINE NO. 132

Outward Bound

Next year, Apple will release its first PDA, the Newton, an electronic organiser which fits in your pocket. It can go anywhere and do anything that you can, including recognising your handwriting and learning to work the way that you want to. Now, take a walk...



Illustration by Garry Hunter

Try using a computer for one of the most complex organisational, logistical and data management tasks of all, managing your own life, and you'll find it almost completely useless.

Put a diary on your desktop computer and you'll quickly find that 50% of the time you need it you'll be away from your desk. Put your address book on a PowerBook and it won't be long before you'll suffer the humiliation of having to power-up in a telephone box.

Up against the common or garden, go-everywhere, lightweight, low-battery power, inexpensive Filofax, computers and the companies that supply them have very little to offer.

All of which is intensely frustrating,

because organising your life is a task for which computers – with their ability to quickly find, sort and display information – could have a lot to offer. Enter stage left the personal organiser, or what Apple describes as the personal digital assistant (PDA). While the distinction between the two might seem a fine one, and is at present completely theoretical, it could be significant.

Organise Yourself

Personal organisers have been with us since the late 1980s, one of the first and best examples being the home-grown Psion Organiser. It had a tiny 16-character screen, an A-to-Z keyboard and ran off standard batteries.

By Tim Carrigan

While bulky and expensive, the biggest problem was its questionable utility. Vendors have followed in the footsteps of early innovators like Psion with other products, notably the Atari Portfolio, the Psion 3, the Sharp IQ range and more recently a large list of non-name Japanese and Taiwanese lookalikes, organisers and pocket computers. But these have had little popularity. Their essential problem is that they offer about the same as your average diary and address book. In theory, their search capabilities make information easier to find than with a standard analogue Filofax, but in reality they are simply list makers that have a limited ability to manipulate information intelligently. What's more, they can only use text, which is a real limitation given how much on-the-fly note taking is diagrammatical.

Other than address, phone and diary functions, the key advantage organisers and hand-held computers have to offer is the ability to do limited word processing while on the move or in a meeting. Using the word processing capabilities, it's possible to use some organisers to hold random notes and ideas.

Even so, as go-everywhere word processing tools, they are far from ideal, especially given the small keyboards and the need for special cables and connectivity software to get the data back to your desktop machine at the end of the process. So, even while personal organisers have grown smaller and more affordable, they have yet to find mainstream acceptance.

The Distinct Technology

It's against this backdrop that Apple conceived the PDA, and the technology which will make it possible, Newton. Newton is distinct from today's personal organisers in four ways.

The first is that it is pen-based, using a stylus to replace both the mouse and the keyboard. Pen-based computing is nothing new, and last year a range of vendors, including NEC, and Grid with the GridPad, released pen-based computers. Users have had a choice of using Microsoft's Pen Windows as their operating system, which has a greater wealth of applications, and the PenPoint operating system developed by GO, which is arguably technically superior.

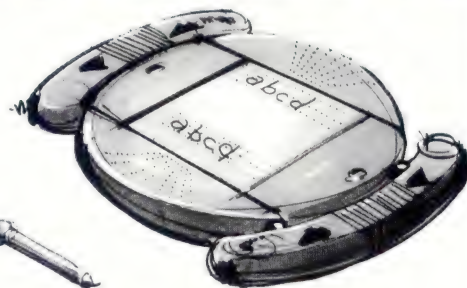
While Pen Windows is a very simplis-

VISIONS OF THE FUTURE

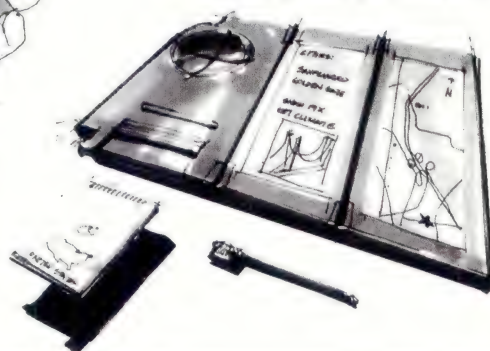
Newton is a technology rather than a single product and Apple envisages a wide range of different devices – here are some dreamed up by Apple technologists. Some will not go further than the electronic drawing board.



Above: The Newton Notetaker has handwriting recognition and sketching abilities and will allow you to take notes on the fly. The device could then clean up the text using a spell checker.



Above: The Newton Draw and Spell is an education device which could help children learn to write and draw.



Below: The Newton Portable Map works out your position in the world and then presents you with a map.

tic adaptation of Windows designed to allow pen input and handwriting recognition, the GO system is radically different from other computer operating systems, and uses many of the concepts which are also fundamental to the Newton's operating system.

Like Newton, PenPoint relies on gestures. To delete something, you draw a circle around it – the equivalent of selecting it on the Mac – and then draw a cross. If you draw a squiggly line under a piece of type, it will be italicised. By mimicking natural gestural metaphors, both systems aim to make it easy for the user to quickly access standard functions without the use of menus, dialog boxes or command keys.

Just A Blank Sheet Of Paper

PenPoint uses blank paper rather than tool metaphors, which is another key idea built into the Newton. In both systems, the screen is treated as though it were a blank piece of paper onto which you can paint, draw, write or whatever. This is radically different

from a desktop computer, which demands that you first select an application, normally limited to just one function. It also forces a very different idea about documents: a desktop computer is hostage to applications you used to create documents, whereas with PenPoint and Newton documents are owned by the system itself.

However, it would be folly to think of Newton as a pen-based computer. Apple has opted for a pen input system because this has the potential to free Newton from the problem that has limited other personal organisers – fitting a full-size keyboard on a pocket device.

The use of stylus input means that Newton will be the first hand-held organiser designed to handle graphical information.

Take a look at any notebook and you'll find that at least 50% of the information is graphical, even if it's only lines going between notes or a circle around something particularly important. The fact that the Newton will have

graphical abilities – you will be able to both paint and draw – makes it much more useful than a standard personal organiser.

A Mark Of Intelligence

Newton is also distinguished from other technologies on the market by its intelligence. Not only can it recognise your handwriting and turn it into crisp, clean type, or take your wobbly lines and turn them into straight ones, it's also, theoretically, capable of organising your data by recognising key terms. When you use the words 'phone', 'write', or 'contact', as in 'Phone *MacUser* and tell them my copy is late', it will assume this should be included on your to-do list. It will also be able to find *MacUser* in your address book and insert the phone number as part of the to-do entry so that when you come to do the task, you have all the information at hand.

Finally, the Newton is different because it is designed not just to store information in the same way as today's personal organisers, but also to help you communicate it to other people. Using infrared technology – the same system we use every time we channel hop with a remote control – Apple plans to make it possible for a Newton device to exchange information with another Newton. The company also sees a future in which these types of machines will be able to use the cellular telephone network – used today by mobile and car phones – to send and receive information of any kind, anywhere.

However, in its first iteration, the Newton isn't going to have all the communications facilities that Apple has outlined. While it's likely that the first version of Newton will have wireless networking between Newtons, if you want to connect to a printer or desktop computer, cables will be required. It's also likely that to be able to fax or modem from a Newton you'll have to buy an additional fax modem that will need to be plugged into a phone socket.

Revolutionary Hype?

There is no doubt that, in concept, the Newton has all the hallmarks of a revolutionary product, but the question is, when will Apple have a shipping product which is able to deliver on some of the promises and hype?

PDA RIVALS

There are many companies hot on Apple's heels, similarly keen to dominate this new market.

Apple already tamed its most worrying rival, Sharp, by agreeing to pool resources and share its software skills with the Japanese giant. But Sharp is no sloth when it comes to PDAs. With its comprehensive line of personal organisers, it has a large share of the market and sells a close relative of the Newton, the Action Manager, on the Japanese market.

Other likely contenders include GO Corp, headed by ex-Claris chief Bill Campbell, which has already developed a pen-based operating system which it licenses to many hardware manufacturers, including IBM and NCR. Now, GO Corp has teamed up with AT&T to develop what the two companies are calling a personal communicator. The

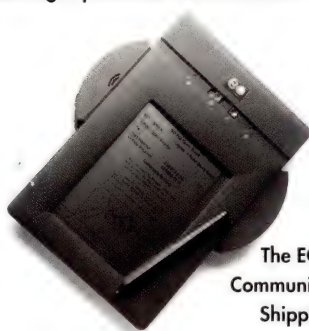


The Sharp Action Manager: Large market share.

GO/AT&T product is envisaged as an intelligent pen-operated phone and fax aimed at desktop use. It will allow users to send written notes as well as traditional faxes.

Also active in the personal organiser market are EO, which is due to release its Personal Communicator in March 1993, Tandy and Casio. It's clear that they both intend to stay that way, having entered into a strategic alliance with each other and GeoWorks to develop a PDA.

Sony and IBM are also said to be developing versions of PDA-style products, and Microsoft has also expressed interest in the market.



The EO Personal Communicator 440: Shipping March.

Lots of problems stand in the way. To get the speed of recognition and the intelligence that Apple needs, the system has to be an order of magnitude more powerful than the hand-held computers on the market today. Apple is on record as saying that the system will be about as powerful as a Mac IIx. Even then, many doubt the software will be able to deal with anything but the cleanest handwriting and the simplest of pre-programmed commands.

A Long Life?

One of the biggest issues facing Newton is the battery technology it will use and the life between recharging. To really work, the Newton will need to be on almost all the time, although it is likely only to be used for a short time in each session. It will also need to respond the moment the user touches the screen with the stylus.

You only have to look at the size and bulk of the PowerBook 100 battery – it's not much smaller than the prototype Newton itself and only drives a

PowerBook for two or three hours – to grasp the scale of the problem. Even though it is much more powerful than the 680X0 family processor at the heart of the PowerBook 100, Apple claims the ARM 3 processor it is using for the Newton is so low on power that battery life won't be a problem.

There is also the question of backing up, printing, networking and faxing from a Newton, all of which will be critical for the business user who, despite Apple's plans to market the Newton as a consumer product, will make or break the system in the first year.

What is encouraging is that Apple still believes it can get the product to market before April 1993. If it does this, and the product delivers on what the company says it will, Apple will be right back on the cutting edge of technology. But perhaps what is more important is that Apple will be once again defining the agenda for computing in the 1990s in much the same way that it did in the 1980s with the whole PC concept and then the graphical user interface.

What Were You Doing When...?

In 1976, Apple Computer was formed in a garage in California more on enthusiasm than sound financial accounting. Sixteen years later, it's one of the most successful computer companies in the world. But it hasn't all been plain sailing.

By Karen Harvey, Joanne Hurley and Toni McTaggart

1976

Steve Wozniak and Steve Jobs form Apple Computer on April Fool's Day. The Apple I, a pre-assembled computer circuit board, debuts at the Homebrew Computer Club in Palo Alto, California. It is released for sale to hobbyists for \$666.66.



The pips squeaked: Harold Wilson resigns as prime minister. Sid James collapses on stage and later dies in hospital. James Callaghan becomes prime minister. Howard Hughes, the reclusive looney, dies. The four millionth mini rolls off the assembly line. Jeffrey Archer, a bankrupt, becomes a best-selling author with *Not a Penny More*, *Not a Penny Less*.

1977

Apple Computer is incorporated. Mike Markkula is made a partner along with Jobs and Wozniak and invests \$250,000 in the company. Apple moves from Jobs' garage to a building on Stevens Creek Boulevard in Cupertino, California.

Clive Sinclair introduces his £175 2in screen television. The King is dead. Elvis Presley dies at the age of 42, a result of a 'drug overdose'. South African black leader, Steve Biko, dies in detention. Marc Bolan, UK rocker, dies.



The Apple II is shipped. It has 4K of memory and costs \$1298. Customers use their own TV sets for monitors and programs are stored on audio cassette recorders. Orders reach \$1 million annually.

1983

Apple launches the Lisa (allegedly named after Steve Jobs' love child) priced at \$9995. Apple says of the Lisa "everyone who has seen one wants one", but UK dealers have reservations about whether the machines are "correctly priced".

AppleWorks is launched. IBM launches the PC Jnr and some stores refuse to accept deliveries. Microsoft launches Windows. Its original form did not pose a threat to the Mac.

John Sculley, formerly president of Pepsi Cola, is elected new president and chief executive officer of Apple.



The £1 coin comes into usage. Dennis Andrew Nilsen charged with murder. Torvill and Dean win the world ice dance championship. The US invades Grenada.

1982

Time magazine's Man of the Year is a computer. Apple's annual turnover is \$1 billion and it throws a 'billion dollar party' for its employees.



A foot-long syringe is found in the wreckage of the Mary Rose, raised from the bottom of the Solent after 400 years. It was used in the treatment of syphilis. Brezhnev replaced by Yuri Andropov. Channel 4 begins broadcasting and Brookside is born.

1984

Apple launches the Mac with an ad during the Superbowl broadcast that parodies George Orwell's 1984. The Mac is unveiled and costs \$2495. Sinclair launches the QL to compete against the BBC Micro.



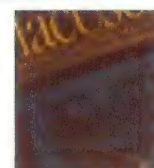
Apple exchanges £25,000 worth of unsold Lisas for Macs at UK reseller Hoskyns. Hoskyns complained of difficulty in selling the Lisa to its corporate clients. Apple UK's managing director, Peter Cobb, maintained that people would not buy Macs in preference to Lisas and that the machine has a huge acceptance from the people who had seen and used it. Unfortunately, not a lot of people had seen it.

The UK's first dedicated sales room is opened by Douglas Adams at 218 Bishopsgate, London. It is part of Personal Computers, the original distributor of Apple products in the UK.

Relax by Frankie Goes To Hollywood causes 'an outrage' in the UK. 83,000 miners go on strike. First £1 million bingo winner in the Sun.

1985

Apple's famous lemmings commercial insinuates that buying a PC is like blindly following others over a cliff. LaserWriter launched for \$6999. Lisa renamed Mac XL. Jobs and Wozniak are named members of the Best of the New Generation by Esquire.



MacUser is launched in the UK. PageMaker ships in the US.

Jobs and Wozniak receive National Technology Medal from President Reagan at the White House. Wozniak resigns to start a new company that will develop products in the home video area.

Employee count reaches all-time high at 5700. Manufacturing plants close for one week due to excess inventory.

The Mac XL (Lisa) is dropped from Apple's product line. ImageWriter II, HD20 hard disk and Apple Personal Modem introduced.

1978



Two employees handle the entire output of Apple disk drives – about 30 a day. Apple establishes Cupertino 'campus' in Silicon Valley, California.

Liverpool win European Cup for second year running.
Louise Brown, the world's first test-tube baby, weighing 5lbs 12oz, is born.
Jeremy Thorpe denies that he had a homosexual affair with Norman Scott and further denies that he was involved in a plot to murder Scott.
The Jonestown Massacre: 913 members of US religious cult, the People's Temple, are found dead in the jungles of Guyana.
Album Of The Year: All Mod Cons by The Jam.

1981

IBM launches the PC. Apple greets its new competitor with a full-page ad in the Wall Street Journal with a headline that reads, "Welcome IBM. Seriously". Markkula lays off 40 employees in an effort to streamline internal machinery. European headquarters opened in Paris and Slough.



Rupert Murdoch buys The Times.
Pope John Paul II shot by Turkish gunman.
Ronald Reagan shot.
Gang of Four break with Labour Party to form SDP.
Charles and Di – hitched (12 years later – ditched?)
There's a riot going on in Brixton.

1979



Margaret Thatcher gets the first of three terms.
Sid Vicious dies of a heroin overdose in New York.
Blair Peach from the Anti-Nazi League, dies after being seriously hurt during clashes with the National Front at a South London rally.

The Apple II+ is introduced, with 48K of memory and a new auto-start ROM for \$1195. Apple's first printer, the Silentype, is introduced.

Apple III announced at the National Computer Conference. It has a new operating system, built-in disk controller and four slots for \$3495.

Personal Software releases the VisiCalc spreadsheet for the Apple II.

Apple II sales rate is 35,000 units, up 400% from the previous year. Apple now employs 250 people in four buildings. Apple goes public with 4.6 million shares of common stock at \$22 per share.

Apple bans typewriters from its buildings worldwide.

1980

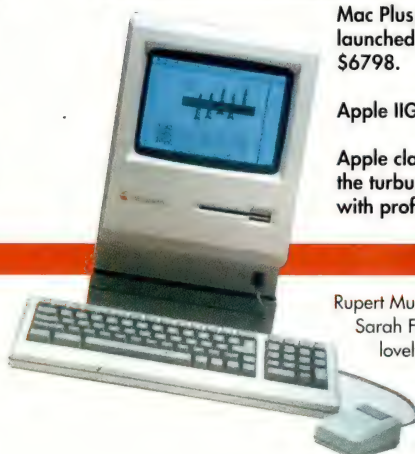


Ronald Reagan is chosen by the Republican Party as presidential candidate.
Ronald Reagan wins US election.
Rhodesia becomes Zimbabwe.
John Lennon shot dead in New York.
Album Of The Year: Scary Monsters by David Bowie
Jean-Paul Sartre dies.
Who dares wins: SAS storm Iranian Embassy in London
Steve Overt and Sebastian Coe lead British Gold charge in Olympics. Allan Wells wins 100m.

Apple opens a European manufacturing plant in Cork, Ireland.

1986

Apple reports a \$17 million loss. Sculley announces reorganisation. Jobs is removed from day-to-day activities as head of the Mac division. Workforce is cut by 1200. Operations are restructured along functional instead of product lines.



Mac Plus and LaserWriter Plus launched, priced at \$2599 and \$6798.

Apple IIGS launched for \$999.

Apple claims to have recovered from the turbulence of the previous year with profits up 151%.

Rupert Murdoch stuffs print workers.
Sarah Fergusson weds Prince Andrew – lovely couple.
Jeffrey Archer resigns as deputy chairman of Conservative Party over allegations he paid a prostitute to go abroad to avoid a scandal.
Crap Single Of The Year: Every Loser Wins by Nick Berry.

1987



Mac SE launched at \$2898 for a dual floppy and \$3698 for a hard disk version. Mac II launched at \$3898 for the basic system.

Apple announces intention to launch Claris, its software arm. IBM launches the PS/2 and finally becomes convinced of the efficiency of the 3.5in disk drive.

At the Macworld Show in Boston, Apple unveils the HyperCard personal tool kit and the MultiFinder multi-tasking operating system.

dBase Mac ships in US.

Herald of Free Enterprise leaves Zeebrugge with doors open, hundreds die.
King's Cross underground fire disaster, 30 die.

Steve Jobs resigns to found NeXT. Apple UK cuts 20% off the price of the 512K Mac and takes the 128K Mac down to £1695.

Dr Who is axed by the BBC.
A fire breaks out at Bradford City Football Club killing 56 and injuring 211.

1988



Apple introduces LaserWriter II family of printers. AppleShare PC is launched. DEC and Apple announce joint technology agreement to integrate Macs and AppleTalk networks with DEC Vax systems. Apple reports first billion dollar quarter and net profits rise 108%.

Apple files suits against Microsoft and Hewlett-Packard alleging copyright infringement of its user interface.

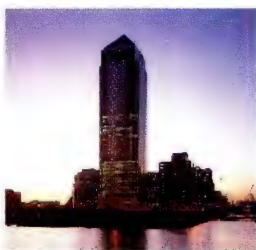
Apple ships A/UX for the Mac II, combining the Mac interface with Unix.

Steve Jobs' NeXT machine is launched with a more sophisticated architecture than the Mac and an optical disc drive, but it doesn't have colour or ports for connecting magnetic disk drives. "To start a revolution, you have to raise the lowest common denominator," said Jobs. But he added generously: "I'm still happy with the Mac. It's great... if you want a current generation PC."

Apple and DEC outline joint development programme and architecture for integrating their networking environments. Apple creates four internal operating divisions:

Apple Pacific led by Del Yocam, Apple Products led by Jean-Louis Gassée, Apple USA led by Allan Loren and Apple Europe led by Michael Spindler.

Net turnover is \$4.06 billion and net profit is \$400.3 million for fiscal year 1988.



Stephen Hawking has a bestseller with *A Brief History of Time*.

Ben Johnson becomes 100m Olympic champion and is then disqualified after failing a drugs test.

Edwina Currie causes an egg crisis over salmonella poisoning. Currie quits as junior health minister.

Lockerbie air disaster - 270 killed.

Top Film: *Fatal Attraction*.

Teenybop Single Of The Year: *I Should Be So Lucky* by Kylie Minogue.

Canary Wharf plans unveiled.

Apple introduces Mac IIx, the first Mac to use Motorola's 68030 processor and the first Mac to incorporate FDHD. The 1.44M drive can read and write to DOS formats. A 4M Mac IIx costs \$7769.

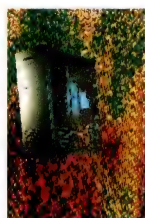
Apple UK raises prices on the SE and II. A base price for the SE is now £2195 and the II is £3295. Marketing director John Leftwich justifies the increases, saying "they are more in line with the realities of the market place".

1992

Sculley outlines Apple's plans to enter consumer electronics market in keynote speech at Consumer Electronics Show. Apple UK bundles printers and colour monitors with its Classic, Classic II and LC machines, bringing the base price of a Mac with screen, hard disk and printer to well under £1000.

QuickTime, Apple's dynamic media extension to System 7.0, debuts at the San Francisco Macworld Expo.

Apple slashes prices on Classic, LC and PowerBook 100 and the Mac LC II debuts. John Lewis becomes the first high street department store in the UK to stock Macs.



A US judge dismisses most of Apple's outstanding claims in the HP/Microsoft copyright suit. If Apple had won, it might have received damages of up to \$5.5 billion. But it didn't. Apple launches the Quadra 900 with a 68040 processor and a 33MHz clock speed.

Apple reveals its notepad prototype, Newton, a 1lb pocket-sized personal digital assistant, which some reports say could rival the IIx in performance. It will be built in conjunction with Sharp.

Apple picks Toshiba as its second PDA partner. It looks like the IIci will be axed and in its place will be the Quadra 500.

Microsoft commits to develop for the PowerPC, Apple's successor to the Mac line which is due to appear next year.

It's a Royal free for all: Fergie and Andrew break-up, Fergie captured in toe-sucking exercise with 'financial advisor'; Di allegedly attempts suicide over loveless marriage.

John Major wins UK elections. But how long will it last?

Bill Clinton, democratic candidate, beats George Bush to US presidency.

UK comes out of ERM.

Apple announces a brand of cut-price consumer Macs in the US called the Performas. Apple UK claims there are no plans to bring the machines to the UK, but the Apple CEO knows better. Watch 1993. Dixons signs with Apple to sell Macs ready loaded with applications software.



Apple announces mail-order operation in the US. Global price reductions with cuts of up to 48% on Mac systems. An entry-level Mac Classic II now costs £525, the LC 4/40 and colour monitor costs £825 and the Quadra 700 4/80 costs £3595. Apple ships System 7.1 and version 1.5 of QuickTime. Apple adds two more PowerBooks and two more mid-range computers - the Mac IIvx and IIvi to its product line. Confused? The best is yet to come.

Allan Loren, president Apple USA, resigns. Michael Spindler promoted to chief operating officer. Soren Olsson is president of Apple Europe.

Apple lays off 400 employees.

Phil Chauveau, managing director of Apple UK, moves to Apple Europe. Jean-Louis Gassée, president of Apple Products, resigns. Sculley assumes responsibility for R&D. Employees stage protest at summer party with banners saying 'Jean-Louis, we love you.' Apple launches Mac IIx and A/UX 2.0. The US District Court dismisses most of Xerox's lawsuit, leading pundits to assume that Apple's own lawsuit against Microsoft and HP will be dismissed. Apple launches Mac IIx.

MacUser is five years old. Launch of low-cost laser printers, the Personal LaserWriter SC and NT. Apple veterans Bill Atkinson, Andy Hertzfeld and Marc Porat form spin-off company, General Magic.

Apple, IBM and Motorola finalise technology alliance for: better integration of Macs into PC networks, a new family of RISC processors, an open systems environment derived from AIX (IBM's Unix, Kaleida and Taligent. Apple's largest product introduction in its history includes the Classic II, Quadra 700 and 900 and a new line of notebook computers, the PowerBook 100, 140 and 170.

Apple reports a loss of \$53.1 million for Q3 compared to a net profit of \$119.8 million in the same period the previous year. This is its first loss since 1985 and is due to the company's massive restructuring.



1989

Apple launches Mac SE/30 for \$4369.



Apple launches IIfx for \$5369.

32-bit QuickDraw launched.

Apple announces core technologies for future system software, including a new outline format, inter-application communications, Layout Manager, Update Finder, Database Manager, new print architecture and virtual memory.

The nuPrometheus League threatens to send source code of Apple's proprietary software to anyone who advertises in US trade publication MacWeek asking for it.

Apple announces it will sell its 16.4% stake in Adobe, claiming that its current development plan would place it in direct competition with Adobe once it releases its own outline font format, TrueType, in its forthcoming system software. Net revenues for the third quarter increased by 26% over the same period the previous year. Sculley says demand for the IIfx and SE/30 machines was very high.

47 people die in M1 air crash.
Troops open fire on students in Tiananmen Square, thousands of students killed.
Berlin Wall comes down, after 40 years.
Wall Street crashes on Friday the 13th.

Annual turnover is \$5.284 billion and profit is \$454 million. Profits are up only 1.5% for the year despite a sales rise of nearly 30%.

Xerox files suit challenging validity of Apple's copyrights covering the Lisa and Mac graphical user interfaces claiming that Apple's desktop was developed with ideas Steve Jobs had gleaned from Xerox Parc.

It looks like the earthquake in San Francisco could hamper progress of HyperCard 2.0 and System 7.0. Or at least that's Apple's rather dramatic excuse.

Launch of Portable and Mac IIfx. It was hard to see a market for either of them. The luggish portable was around three times the weight of similar offerings in the PC market and the IIfx seemed to be going for the same market as the IIfx, launched in March. The speed at which Apple launches new products causes confusion among its installed base.



1990

Apple lists on Tokyo stock exchange. Beta version of System 7.0 ships to developers. Apple shows revenues down 2% from the same period last year and profits down 39% to \$98.5 million.



Mad Cow Disease threatens farmers – and cows.
Nelson Mandela is released.

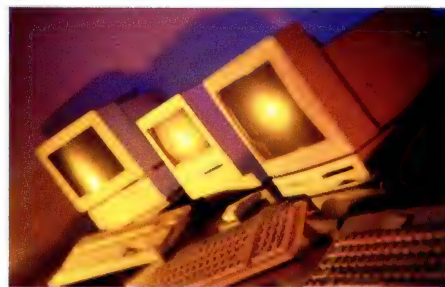
Poll tax riots in London.

Navratilova wins Wimbledon for ninth time.

Gazza cries – everyone knows why.

French and English tunnel workers meet one another in Channel tunnel breakthrough.

QUOTE Prison officer, Stangeways prison: "If they don't come down by midnight, we're going to play Des O'Connor records."



Apple rolls out suite of low-cost Macs: the Classic, the LC and the IIfx. The cheapest Mac, a floppy-only Classic, now costs £575. But Apple can't deliver quickly enough – resellers get the hump as they lose orders because they can't supply and users get desperate. The Portable has its price cut, but still nobody wants to buy it. The SE, Plus and IIfx are dropped. Apple claims the IIfx already outsells the IIfx but System 7.0 is delayed again. Apple and Adobe sign font truce.

After two years of waiting, Apple and DEC's strategic alliance finally bears fruit in the form of DEC LanWorks for the Macintosh.

Spindler becomes president of Apple. Beatles-owned Apple Corps sues Apple Computer Inc over an alleged breach of contract signed by the two companies in 1981.

Apple faces its biggest threat yet with the launch of Windows 3.0. Microsoft's new operating environment brings a true graphical user interface to the PC and brings PC users features and user friendliness previously confined to the Mac. "We need to explain better that the benefits of the Mac go beyond the interface," said a spokesman for Apple.

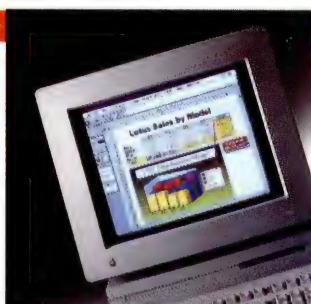
1991

Apple unveils System 7.0 – only eight months late. New features include Publish and Subscribe which dynamically links data between documents. Apple is criticised for abandoning its 'Mac for everybody' philosophy as the lower end machines will not be powerful enough to run the new operating system. QuickTime, a new software architecture for multimedia applications, is announced. Apple announces it will reduce the structure of the company to reduce operating expenses. This will mean a further 10% reduction in its workforce.

Apple's largest UK dealership, CSS, collapses leaving customers and creditors in the lurch. Apple keeps a distance saying: "We can't act as guarantors for our independent resellers."

Even lower-cost laser printers launched: the StyleWriter and Personal LaserWriter LS at £295 and £825. A deal between Apple and Novell results in NetWare for Mac 3.0 but Apple claims that System 7.0 will be more significant in determining longer term Apple networking plans.

Apple and IBM, long-time arch enemies, sign letter of intent to co-operate on major technology initiatives for the 1990s. The move is seen as a combined attack against Microsoft, but a US executive for Microsoft describes the companies' promises as "a little bit of fairy dust". Apple UK cuts 10% of its 180-strong workforce and executive salaries are slashed by up to 15%.



Lotus 1-2-3 for the Macintosh launched.



Ring Ring Ring (ha ha hey) by De La Soul released.

"Wrong snow" blamed for halted trains.
Kuwait liberated.

David Icke announces: "I know I am a being called the son of God."

John McCarthy released after over five years in captivity.

Bank of England says worst of recession is over. Some people believe it.

Gorbachev toppled by coup. Coup put down but Boris Yeltsin takes power. The end of the Soviet Union.

Robert Maxwell found dead off the Canary Islands.

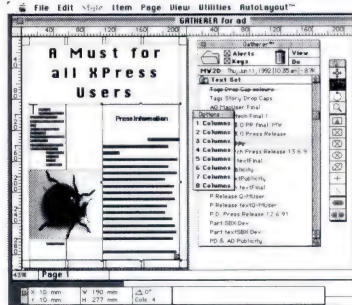
Terry Waite freed after five years.

'Gatherer ...the hot XTension of 1992'

November 1992 MacUser



There's not really very much we can add to the following comments made in the November 1992 issue of the prestigious US MacUser.



'The Gatherer, does just what its name says: It automatically rounds up text and graphics files from specified folders anywhere on your network and lists them in a palette, ready for you to place directly onto a page. You don't have to create a box first. Just select an item, drag out a box, and specify the parameters you want, and Gatherer does the rest. This could be the hot XTension of 1992.'

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Musclebound

PowerPC is the powerful RISC chip on which Apple will base its next generation of computers – the replacement for the Mac line as we know it. But the move from Motorola's 680X0 chip family raises questions about emulation, applications software and compatibility. Now, as the launch date looms, the issues are becoming clearer.

Illustration by Andy Turnbull. Photo The Image Bank. Movie image James Bond M.G.M./U.A. Home Video



The Mac is about to become a victim of high-tech natural selection. By the end of 1993, the first PowerPC system, setting new hardware and software standards for personal computing in the next decade, will call time on the family of Macs based on Motorola 680X0 family processors and signal the imminent arrival of a new generation of high-performance RISC-based machines.

According to Apple's Frank Casanova II, whose business card celebrates him as 'Lord of the high-end RISC CPUs', the future of the Mac is PowerPC. "It's important that comes through loud and clear," he says. "But we can't introduce just one PowerPC and say that's the future. We have to be able to introduce

multiple machines based on single and multiple chip designs that address the needs of our customers across the entire range of what we've got today. RISC architecture is very scalable. It'll be easy for us in a short period of time to introduce a broad product family. So, at some point, PowerPC architecture will take over the whole line. It won't be soon, and it won't probably even be towards the end of this decade. But at some point in time all Macs will be RISC-based."

Love Child

PowerPC is essentially the love child of the *menage à trois* between Apple, IBM and Motorola and was originally

By Michael Prochak

◀ envisaged as the pride and joy of the 1991 joint-venture announcement. PowerPC will be a direct descendant of IBM's RS6000 RISC systems but will use a single-chip version of the architecture built by Motorola.

But while RISC is unquestionably a powerful enabling technology, there is still a good deal of curiosity as to why Apple is showing such interest in it so late in the game – almost all the workstation vendors, such as Sun and Silicon Graphics, have moved to RISC.

One of the reasons Apple gives is that the Mac has always been seen as a personal computer, to be compared to 386 or 486 PCs and other machines sold as personal computers. The workstation market wasn't seen to have the wealth or the breadth of productivity applications and, for the most part, Apple didn't feel it was at that much of a performance disadvantage with its evolving product range.

"The 68040, for example, gave us an enormous performance boost with the Mac Quadras," says Casanova. "And as long as we were between 20% and 25% of their [workstation] raw CPU performance, which our machines were, the benefits of systems integration that we have over them, the ease of use of our interface and the applications that we have, helped us close the gap. And it's not just a raw performance issue, it's a matter of whether you can get your job done at all. Since the Ilci, the Ilfx and the Quadras, we've really had nothing bad to say about our line. We always want it to go faster, but you can't get everything you want."

Super-Scaling, Flip-Flopping

Apple's interest in RISC started when it noticed trends in the high-end workstation world with technology called 'super-scaler architectures'. "Without getting too nerdy, the notion of performance is based on a variety of metrics," says Casanova. "But one you can look at has to do with the clock speed of a microprocessor and the number of those clock cycles it takes to actually decode and execute any given instruction. With a 68030 it would normally take between eight and 12 CPU clocks. The 68040 usually took around two CPU clocks to decode and execute an instruction. That helped us move our performance up closer to the RISC guys

that were always single-cycle execution – one clock, one instruction. But what was happening was that these super-scaler machines started showing up in more personal forms. All of a sudden, that kind of technology started becoming more integrated, and therefore cheaper and more interesting. And the notion of super-scaler is that in a single clock cycle, you can execute multiple instructions. So instead of clocks per instruction, the equation flip-flopped and went to instructions per clock. The entire metric by which these machines run changed and the performance comparison between traditional CISC and RISC started to change in a big way."

For most people in the personal computer world, RISC today still means high-end engineering workstations running Unix. Most of them are difficult to use and have expensive price tags. What Apple hopes to do with PowerPC is to drive RISC down market and make it mainstream. But to do that, Apple will

"It has got to be RISC my mother can use," says Apple's Frank Casanova II

need to leverage the Mac's ease of use, and the new PowerPC machines will need to be every bit as easy, if not easier to use, than the existing Macs. "It has got to be RISC my mother can use," says Casanova. "It's got to be 'RISC for the rest of us' to make this proposition work. And this is not how most people look at RISC today."

With a successful RISC implementation, PowerPC will have horsepower to burn, allowing agents, voice recognition, 3D graphics and other processor-intensive functionality to become mainstream. "We have an opportunity now with the performance of these machines, the user interface, look and feel, and integration of technologies to make these machines do things differently than ever before," says Casanova. "Perhaps so radically different, it could include a combination of speech, virtual

reality, agents running around in the background, but definitely something radically different. Those are things that become far more realistic when you have this kind of performance. When you have mips (million instructions per second) to burn, then you might want to use them some place where they're doing something radically new. Hardware is commodity. The difference is software and the difference is our ability to integrate technologies with software in a seamless, transparent and, for the most part, upwardly-compatible fashion. That's where our real advantage is going to be over Windows NT. We always hold most of our cards."

PowerPC will inherit traits from both IBM's current RS6000 systems and evolving versions of System 7.0, of which the modular design and expandability via extensions will be used to add new features without jeopardising compatibility with the existing software base. When PowerPC appears, 'personality' extensions will be introduced to patch System 7.1's structure to allow it to recognise the new hardware.

The Migration: Trad Mac To PowerPC

To make the migration between traditional Mac and Mac PowerPC as painless as possible, Apple plans to introduce a microkernel object code emulator so new machines can run existing 680X0 family applications. According to Apple, research suggests that most Mac applications spend over 66% of their time in Toolbox code. Therefore, to prevent the adverse effects of emulation – speed loss – the plan is to implement the Toolbox in RISC code so that applications spend most of their execution time in native RISC code rather than in slower emulation mode. The proposed microkernel will provide a consistent foundation from which the operating system can access hardware resources regardless of the processor.

Casanova says: "The notion is that we want to lift up System 7 and plug in some new things, one of which is a level of device independence so new versions of the operating system can run on high-end 680X0 or PowerPC [chips]. The emulator will look at every application and determine whether it's 680X0 or PowerPC and whether it needs to go through the emulator or is a native

application. The microkernel is the place where we can add that functionality."

In theory, this strategy means that current Mac users will not have to abandon their favourite 680X0 applications to use a PowerPC and that they can run all of them with reasonable performance via the emulator until RISC-coded versions become available. "Now, mom's got an SE at home," says Casanova. "And she uses a few applications. Not only should PowerPC be as easy to use as the Mac, but it better run the applications mom already bought. So, we guarantee that when these machines come out, the applications that you have today will run."

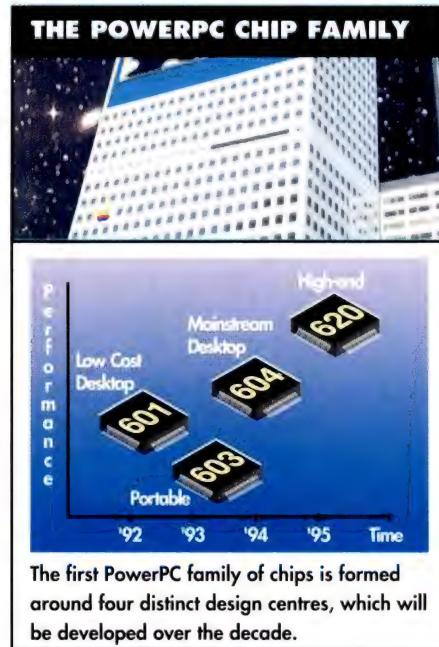
But will future Macs provide a direct hardware upgrade path to PowerPC or will users wanting to migrate simply have to throw their current Macs away and start again? Says Casanova: "It would be our goal to not miss the boat in providing upgrade paths from the Mac to the Mac PowerPC. There are still a few environmental constraints, maybe some power, some cooling or board size issues we have to contend with. But our goal is to be as aggressive as possible in providing an upgrade path for our installed base." In other words, he's not saying.

From the user's point of view, PowerPC machines will run System 7 and Apple and IBM Unix applications. At its most practical level, the transition to PowerPC should be the easiest in the history of personal computers.

Giving Away The Family Jewels?

Won't PowerPC effectively give away the 'Mac advantage', particularly when competing for corporate accounts where buyers prefer to shop around for hardware on a value-for-money basis rather than buying proprietary equipment from a single manufacturer?

"We'll give NT a good run with PowerPC," says Casanova. "Power PCs will sit on the same networks with RS6000s and since we signed the deal [with IBM] we've done well in a lot of 'Blue' houses in terms of networking. We will compete with IBM and others head to head, every day on every front. This is not a merger of any sort. But when you have the two largest manufacturers of computers in the world working together, something



interesting is bound to happen."

After the initial announcements of agreements between IBM, Apple and Motorola last year, briefings suggested that the first PowerPC, in the form of a low-cost desktop machine, would appear in late 1992 or early 1993. However, Apple has since revised this date to coincide with successful chip trials rather than actual product launches.

The transition to PowerPC should be the easiest in personal computing

Casanova says: "The rule of thumb is get a chip, wait a year – then you get a machine. The Motorola 601 chip is the one we're going to use initially in our first machines. This will be followed over time by a family of chips. We currently have first silicon on the 601 and it's running in the lab."

Apple claims that there are 'many dozens' of developers starting to write code for Power PCs. Shortly, these are expected to expand into the hundreds. The only limiting factor is that development tools are still evolving. Casanova says that PowerPC is the biggest, most highly funded and most important programme Apple Computer has going at present so it is obviously in Apple's best interest to ensure that when Power PCs arrive, there's at least one of every major type of application on the shelf, shrink-wrapped, and ready to go.

PowerPC: No SPARC Killer

According to Casanova, Apple is not out to build Sun killers, SPARC killers or Silicon Graphics Indigo killers, and it is not going to narrow its focus on any niche market. The volume of PowerPC sales in any given month is projected to outstrip most workstation sales in any given year, if Apple succeeds in building machines that truly make RISC performance affordable.

In the PC world, most manufacturers would die to get one 'revolutionary product'. Apple had one with the original Apple II, and another with the Mac. Now with PowerPC, the company is looking for yet another one to 'hit out of the park'.

Casanova says: "We want to take and change the way people interact with their desktop environment yet again. And it's not just CPU performance that's going to do this. Performance by itself is interesting, it's enabling, but, for the most part, boring."

"What we need to do is build into these machines far more interesting capabilities like user and human interface advances. Speech, voice recognition, text-to-speech capabilities are all right on the horizon. We also want telephony sub-systems so that these machines can communicate, and video capabilities are going to become more and more mainstream. And then the whole notion of agents: intelligent little processors that are different for you and for me, that do things for us while we're there or not there. So our machines are going to become far more personal. You'd think that the more powerful a machine becomes, the less personal it becomes. But it's not. It takes more performance to make a machine more personal because the things that you want it to do require all the performance in the world."

For Apple, PowerPC was the most important aspect of the IBM/Motorola deal and the establishment of PowerPC as a mass-market platform is absolutely essential to its future. The only remaining question from Apple's point of view, with IBM's changing fortunes and its apparently increasingly luke-warm commitment to PowerPC chip development after recent re-negotiations with Intel, is whether PowerPC is really worth the risk?

Eurocrat

Apple insists that its concentration of power in Paris will not corrode regional autonomy.

The company clearly takes a different view of European union to many Europeans.

By Chris Lannigan

In the 10 years or so that it has taken Apple to grow its garage-brand technology into a \$7 billion global business, the extraordinary loyalty of its customers has been critical. More fans than mere users, the possessive passion the Mac arouses has always mystified the average PC-conditioned sceptic. This makes the antipathy these same customers show towards Apple itself all the more curious.

The nature of the carping may have varied over the years – endless complaints about its dealers, its iniquitous UK pricing policy, the grey importer wars, the steady corporate drift away from its beddened roots, its sheer unapproachability, and yet more complaints about its dealers – but the tone has remained fairly consistent: love the technology, not so sure about the company. Little wonder then that the reported ascent of Apple Europe (as in Paris, France) at the apparent expense of Apple UK (as in Stockley Park, Uxbridge) has provoked raised eyebrows.

Change Of Heart

These days nothing at Apple is quite what it was. From its belated embrace of affordable volume computing, to its dalliance with one-time arch enemy IBM, to its new-found passion for small but perfectly formed interactive widgets, Apple is reinventing itself.

It is not only the scale of the transformation which is impressive: by cautious corporate standards, the pace is positively breakneck. It is only two short years since Apple launched the Classic and LC on an unsuspecting market and kicked the Mac into the mainstream. Since then it has dramatically reduced the once interminable lag between product launches, with significant upgrades to the PowerBooks, mid-range Macs and Quadras coming on stream in months rather than years. It has also finally begun to look beyond the lifespan of the Mac and flesh out the oft-repeated insistence that it is not a one-product company. In forging development alliances with the likes of IBM, Sony and Toshiba, Apple has committed itself to

not only conquering strange, unfamiliar desktops, but also moving off the desktop altogether.

This new Apple gospel of all-out growth has been reflected in a radical company-wide restructuring. The company's global management model has long been roughly pyramid-shaped, with Apple exercising corporate control at the top, over three semi-autonomous geographic regions – USA, Europe, and Pacific – at the bottom. (According to its 1991 annual report, 45% of total sales came from outside the US, representing an increase of 22%, compared with a rise of just 8% in the US.)

First, Apple moved to "sharpen its management focus" by reforming itself into distinct product divisions covering hardware, software, cross-platform computing, object-based systems, advanced technologies and products, and consumer products. One year on,

To get closer to customers, Apple is undertaking a Europe-wide dealer overhaul

Apple reorganised its US, European and Pacific sales and marketing divisions as "customer-focussed" business units geared to its main markets – education, business, consumer, large accounts and government, and service and support.

Whatever doubts Europeans may have about the prospect of European union, Apple clearly doesn't share them. Its European reorganisation effectively abandoned local country-level management and concentrated power in the hands of five business unit managers working out of Apple Europe's headquarters in Paris – each responsible for six new regional areas based largely on common language. The single exception to the new orthodoxy was Apple France

(long seen as the Golden Delicious of Apple's eye) which was deemed, "for the time being" at least, to be doing well enough to be left to its own very successful devices. As for the UK, it lost a managing director and gained four regional business unit managers responsible for the UK and Ireland, each with their own profit and loss responsibility, reporting direct to Paris.

A New Deal

As part of its campaign to get closer to its customers, Apple is undertaking a major Europe-wide overhaul of its dealer network. In the UK the established mix of flagship AppleCentres (one-stop shops replete with Bang & Olufsen-style designer fittings and a surfeit of Apple attitude) and most less-exalted 'authorised' dealers (inevitably and often unfairly seen as inferior) are facing competition from a new breed of Apple 'retailer', including well-known high-street operators like Dixons, the John Lewis Partnership and Wildings.

One of the key components of the new twin track approach is a rigorous certification programme designed to encourage established dealers to focus on what they do best – add value. According to David Manovich, head of the newly-created Business Unit, the change is both desirable and inevitable. "Previously, a lot of dealers were selling to a very broad customer set: education, individuals, small-to-medium business and even large business. This kind of generalist approach may have worked in the past, but these days the market is much more competitive and dealers really have to decide what business they want to be in: retailer, corporate reseller, DTP reseller or whatever. Dealers aren't being forced to specialise, but they are much more exposed without some kind of level of easily-identifiable expertise they can use to differentiate themselves from the competition," he says.

With over 60% of its dealers certified to date, and 40 separate certification categories, Apple insists there is no limitation on multiple certifications as



long as dealers can satisfy tough pre-defined criteria. Manovich says that the benefits of specialisation are increased turnover and Apple incentives: "We recognise that building new markets takes more time and money and we are willing to invest in that. Certified dealers get additional margin that takes account of these extra costs and exclusive access to some of our marketing campaigns."

The first of these campaigns, channelled through Apple's certified accounting dealers, offers further evidence of a new pan-European sense of purpose. Encouraged by research which showed that only 50% of UK small businesses currently own a personal computer, the 'Big Boss' campaign was developed in the UK last year and subsequently translated for use in eight other European countries. According to Craig Sears-Black, business marketing manager at Apple UK, 'Big Boss' aims to encourage small businesses to accept that "using the Mac for accounting is just as easy as it is for DTP" as well as selling the basic virtues of the Mac to non-believers.

By combining dealer training, specialist press advertising, direct marketing of a 50-page Mac small business 'bible' and equipping dealers with multimedia seminar kits, the scope and size of the campaign represents a big departure for Apple. According to Sears-Black, the campaign is a prototype which Apple intends to use in other areas, promising "a whole range" of similar initiatives over the next year. "The advantage of working collectively isn't really a matter of saving money but doing bigger and better things," he says.

The Home Run

At the other end of the sales spectrum, Apple's new retailers have been selling the consumer market a cut-down Apple portfolio, ranging from the Classic to PowerBooks, for around three months. Targeted primarily at what Apple calls the "home and home office" user but also at "the very small business", Paul Donovan, Apple UK's consumer business unit manager insists that the retail

Apple's long-term aim is to put Macs in every high street in the country

outlets are not merely box-shifters. "Just as the future success of Apple's business channel is very much geared to targeting value-added services through certification, the consumer customer will be offered added value relevant to home and home office use," he says.

By way of example, Donovan says that, as well as its current policy of bundling appropriate software – currently a mix of GreatWorks, KidPix, LetterPerfect and ClarisWorks – Apple is also "examining the whole question of on-site service and support and telephone support. We believe we can tap an entirely new market for the Mac. We can't say exactly what we are going to do with support but watch this space!"

With around 130 retailers signed up to date and a target of at least 250 by mid-1993, Apple's long-term aim is to put its products in every high street in the country. So far, so good, says Donovan. "A lot of lessons have already been learned about what works in terms of price points, co-operative advertising, in-store presence, merchandising materials and so on, but we won't have a true view on how well we're doing until Christmas." And what about the new generation of Apple PDAs? "We are currently working with Mac technology because that's what we have. But we also see this as an investment business for the future. As and when new products come along in 1993, there may be radical changes as different kinds of outlets lend themselves differently to new kinds of products," he says.

In the meantime, Apple has added its new CD-ROM-based Mac IIvi to the retail mix and more changes are due in the new year with the belated introduction of the cut-price Performa-badged Macs which have been selling in the US for some time. Donovan confirms that Performas are definitely due in the UK early in 1993 but refuses to be drawn on the configuration save that "the product will differ from the US version". Such circumspection is not that surprising given that the IIvi is virtually a Performa in disguise, and that Apple Europe has used the IIvi's unavailability in the US as proof of a new autonomous streak in its product strategy.

Wider Horizons

Apple's big break in the UK came with the dawn of DTP in the mid-1980s, and, aside from a recent rise in education sales (estimated by one analyst to account for as much as 30% of the total), that's where the Mac has been ever since. "It's fair to say that our sales are still dominated by publishing," says David Manovich. "But then publishing is an enormous business in the UK and we happen to have the best solutions in the industry." However, he also argues that Apple's dealer reforms will lead to new customers. "We've now got the

- ◀ opportunity to look at new markets that give us tremendous opportunities to grow. The corporate market, where our CPUs and peripherals allow us to be the best universal client in large work-groups, will have more focus from our resellers in the future than in the past."

Not surprisingly, Manovich's interest in winning over more corporate customers is mirrored by the reorganisation, which created a separate business unit devoted to large accounts and government. A call for more effective pan-European partnerships was one of the key demands to emerge from the most recent conference of Apple's own corporate user group, MacIS Europe. "Large companies are replacing localised IT functions with a much more networked organisation, standardising on products and services," says British Petroleum's Keith Moseley, spokesperson for MacIS. "We [BP] want to ensure that we can work with Apple and that they understand our needs, not just in the UK and France but right across Europe... and I'm utterly convinced that the rest of MacIS shares this objective." Of the 85 MacIS company members – each with a minimum of 100 Macs – over 25% are based in the UK. Yet, although alongside BP, Apple counts big names such as KPMG, Mercury and British Telecom among its corporate success stories, the list is still a limited one. Moseley, however, considers its prospects better than ever. "Apple is definitely closer to the customer as a result of the reorganisation. In the UK, it is not only working with companies with a significant investment in Macs, it is also targeting a number who are on the brink of making that investment."

Apple's designs on the corporate market are echoed in education, which already contributes around a third of UK revenues. Adrian Weekes, chief of the revamped education business unit, describes its approach as a "reinvestment" in education: "The restructuring into business units has put more resources into education and given it its rightful share of our attention." Apple now has 14 people working on education compared with "five or six" previously, and has more than doubled the number of people working in its dedicated education dealers.

The UK has met most success in the higher education sector, both with



institutions and individuals, where its own research shows it is the market leader. It is also a market where there is an established tradition of European co-ordination – through the University Consortium. In practice, Weekes argues that this meant different things in different countries. "In some countries it was a buying club while in others it was a loose association of users – somehow the whole thing was pulled together once a year under the umbrella of an enormous conference."

Apple is currently implementing a new consortium structure across Europe, designed to bring together users with common areas of interest. "There are much greater opportunities for exchanging ideas between the new regions," says Weekes, outlining the new 'faculty focus' strategy where each region takes responsibility for a specific interest group – in the UK, it is science

Apple's designs on the corporate market are echoed in education

and engineering. Confirming the demise of the big annual conference, Weekes says that "instead of one mammoth annual event that tried to cover everything, there will be six regional events, where each country hosts its individual area for anyone who wants to attend."

According to Weekes, the structure has also freed resources to pursue local priorities. "Unlike most other European countries, we have a significant chunk of UK business in schools, particularly in Northern Ireland and Scotland, where we are far and away the market leader," he says. It is now putting new emphasis on repeating that success in England and Wales and targeting the further education sector for the first time.

One Europe, One Apple?

Not everybody shared Apple's internal upbeat assessment of Europeanisation when it was announced six months ago, with charges of an acute power vacuum and unkind characterisations of senior Apple staffers as headless chickens. Such doubters have virtually disappeared now that the new regime is up and running, and now that David Manovich has been persuaded to double up his business unit duties with the job of company manager.

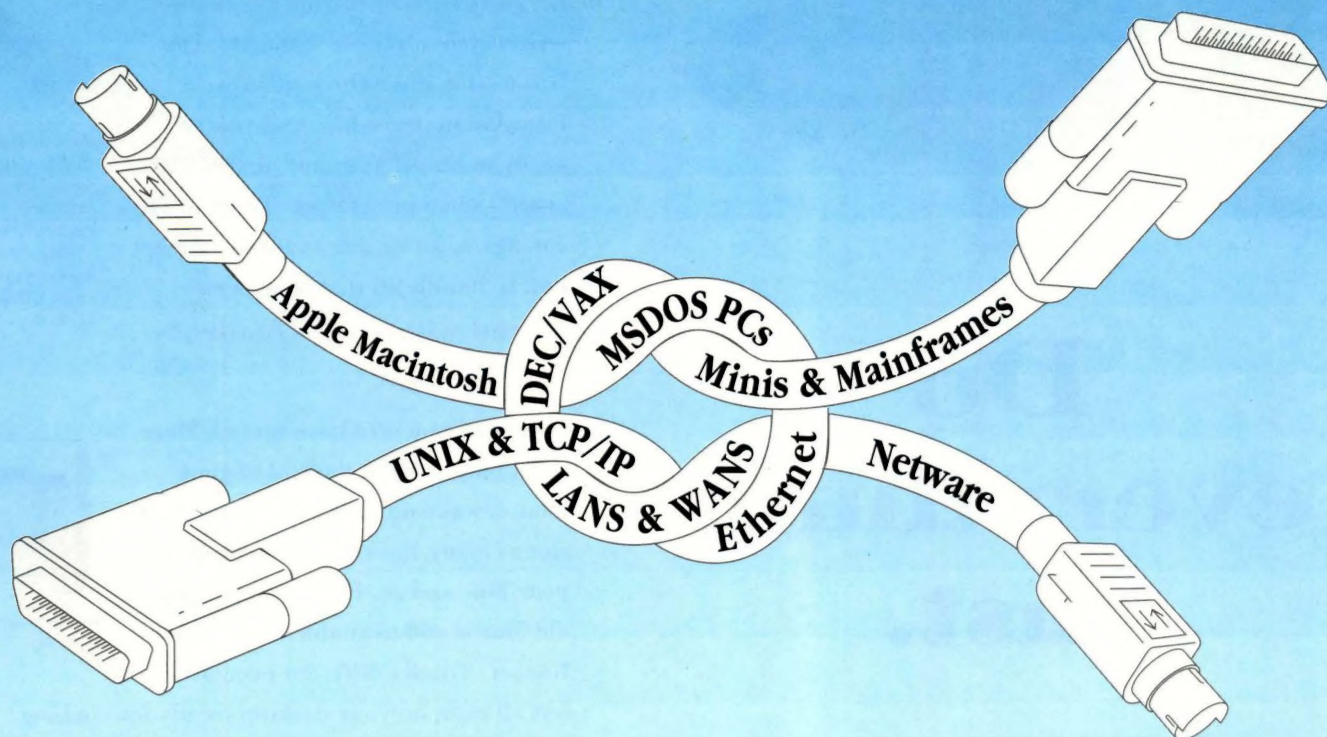
Manovich, a relatively recent import from Apple USA, is adamant that there has been no loss of local autonomy as a result of the concentration of power in Paris. "There is still a great deal of autonomy in the regional groups – coupled with a lot of synergy and economies of scale. The new structure recognises that there are still distinct differences country to country, and the regional managers are given autonomy to account for those. I have total autonomy on where to focus my marketing resources and don't have to consult other business unit managers or refer to Paris."

He argues that the new structure is an indication of Apple's global maturity, and says that once the company reached a critical mass of customers, a new approach was inevitable. "The market place is becoming more complex and we were finding that instead of a significant business, we had significant businesses. There are distinctive differences between education, consumer and business customers, and now we are looking across broader geographies to see how we can sell to specific kinds of customer."

Manovich cites Apple's UK's 1992 results, when it exceeded worldwide trends in unit growth, revenue and market value, as proof of its prospects. He also refutes any suggestion that the UK will ultimately suffer from what has been politely diagnosed as a misplaced US sense of European homogeneity. "What we've done is to recognise local differences and give local people the authority to build their businesses – within a focussed context in a defined geography."

For the UK, all of this translates as a good old-fashioned leash. A little longer than in the old days maybe, but just a smidgen tighter.

Don't tie yourself up in knots ...



... connect with AppleCentre Chiswick

Not so long ago in the world of business, the word on everyone's lips, in relation to computer technology, was "compatibility". If the system you had wasn't "IBM™ compatible", then you might just as well have thrown your investment up in the air on a windy day.

In this day and age the ability to access and share data and peripherals over networks of different makes of computer is the key issue.

Fortunately the Macintosh™ is one of the most connectible computers on the market today. This not only means that you benefit from using the easiest, most productive computer in the world, with its intuitive and consistent way of working, but you also have the ability to take advantage of the benefits of larger systems, such as storing and analysing large amounts of data and having access to extensive computing power.

At AppleCentre™ Chiswick we understand how important it is to protect your investment. We have the resources to assess your requirements and provide an integrated system solution, based on Apple™ and third-party hardware and software, to match them. We also offer a full back-up service which includes network development, cable installation, user-training, technical support and on-site hardware maintenance.

Get connected, call one of our consultants now...

081-995 1872



AppleCentre Chiswick

Certified Network Technologies Specialist



Do everything fast.



Do everything at once.

Rocket - a Quadra on a board.

If you're tired of staring at spinning wristwatches, plug in a Rocket. One Nubus slot and a three-minute installation procedure and you're ready to lift off at up to Quadra 950 speed - sometimes faster. There are no catches, nothing new to learn - except how to handle all that spare time.



Rocket 25i low cost 25MHz version. Fine for publishing. (RRP £1299.00)

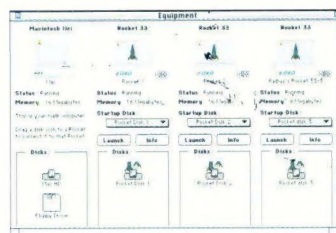
Rocket 33 '040 at 33MHz - the fastest Rocket on planet Earth. (RRP £2199.00)

Bored with your Quadra? RocketShare.

If your dream is to have up to 5 Macs throbbing away at the end of your mouse, wake up to RocketShare. Just slot as many Rockets as you need into your Mac and go. From then on, your old Mac is still available, as is each Rocket. Totally different processors but all right on your desktop, ready for clicking. Each a separate environment running its own system, its own applications - all at once. You can scan a document, spool a print job and retouch Granny all at the same time.



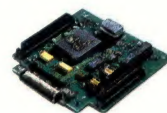
RocketShare. (RRP £399.00)



Partition drives, share them or connect direct through the SCSI-2 daughter board.

Sharing drives or even files is as easy as AppleShare because it IS AppleShare but turbo-charged as Nubus connects everything together.

And if SCSI



SCSI-2 Booster Board - SCSI-2 port that clips onto any Rocket. (RRP £279.00)

access starts to slow you down, simply clip a SCSI-2 booster board to any Rocket and connect direct, taking data transfer rates up to 7MB per second.

Rocket into the future.

Buy any Rocket and you are buying a building block for a Macintosh system limited only by your imagination. A platform ready to run Apple's new generation of IAC software that shares processing across a network. Wherever your Rocket goes, shared or not, your investment in power-processing is guaranteed.

For more information or a CD-ROM demonstration disc simply ring 0635 38531 or write to

Radius (UK) Ltd,
2 Mill Court,
Mill Lane, Newbury,
Berkshire RG14 5RE.

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